

# Delaware Science Coalition



## Grade 1 Organisms Unit Template



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*Preface: This unit has been created as a model for teachers in their designing or redesigning of course curricula. It is by no means intended to be inclusive; rather it is meant to be a springboard for teacher thought and creativity. The information we have included represents one possibility for developing a unit based on the Delaware content standards and the Understanding by Design framework and philosophy.*

### **Brief Summary of Unit**

**This unit is a study of comparisons between plants and animals and their basic needs for survival within terrarium and aquarium habitats. Students observe organisms within their habitats to determine changes over time.**

## **Stage 1: Desired Results** **Delaware Science Content Standards**

### **Delaware Content Standards**

**This course focuses on the Delaware Science Content Standards and Grade Level Expectations in Standards 1, 6,7, and 8 found on the following web site: [http://www.doe.k12.de.us/programs/ci/content\\_areas/science.shtml](http://www.doe.k12.de.us/programs/ci/content_areas/science.shtml)**

### **Standard 1- Nature and Application of Science and Technology**

Understanding and Abilities of Scientific Inquiry

Students should know and be able to:

1. Understand that: Scientific investigations, whether conducted by students or scientists, involve asking a question about the natural world.
  - Be able to: Generate questions and predictions using observations and exploration about the natural world.
3. Understand that: The purpose of accurate observations and data collection is to provide evidence. Scientists use tools to enhance their senses in order to obtain more evidence.
  - Be able to: Collect data using observations, simple tools and equipment. Record data in tables, charts, and bar graphs. Compare data with others to examine and question results.
4. Understand that: Scientists use observations from investigations and knowledge that is already known to develop an explanation.
  - Be able to: Construct a simple explanation by analyzing observational data. Revise the explanation when given new evidence or information gained from other resources or from further investigation.
5. Understand that: The purpose of communicating with others is to share evidence and conclusions. Scientists communicate the results of their investigations to others.
  - Be able to: Share simple plans, data, and explanations with an audience and justify the results using the evidence from the investigation.
6. Understand that: The use of mathematics, reading, writing, and technology are important in conducting scientific inquiries.

- Be able to: Use mathematics, reading, writing, and technology when conducting an investigation and communicating the results.

### **Standard 6: Life Processes**

#### Structure/Function Relationship

Students should know that:

1. Plants and animals are similar to and different from each other in observable structures and behavior. These characteristics distinguish them from each other and from nonliving things.

Students should be able to:

- Select the hand lens as an appropriate instrument for observing the structure of aquatic and terrestrial organisms in greater detail.
- Observe individuals of the same plant or animal group. Describe physical differences (e.g., size, color, shape, markings).

2. Each plant or animal has different structures that serve different functions in growth, survival and reproduction.

Students should be able to:

- Identify and describe structures of plants and animals that help them survive in aquatic and terrestrial environments.
- Sort and group plants and animals based on the structures that enable them to function in their environment (e.g., animals that have fins for swimming versus animals that have legs for movement on land).
- Compare and contrast the observable structures of humans to those of other animals and plants. Record and communicate the similarities and differences in their structures.

#### Matter and Energy Transformations

Students should know that:

1. Plants and animals are living things. All living things have basic needs for survival including air, water, food (nutrients), space, shelter, and light.

Students should be able to:

- Observe a variety of plants and animals and identify basic needs that are common to plants or animals of the same group, such as food, water, air, shelter, space and light.

2. In addition to basic needs for survival, living things have needs specific to the organism such as temperature range and food requirements.

#### Regulation and Behavior

Students should know that:

1. Senses help humans and other organisms detect internal and external cues.

## Life Processes and Technology Application

Students should know that:

2. The ability of an organism to meet its needs for survival is dependent upon its environment. Manipulation of the environment can positively or negatively affect the well being of various organisms that live there.

Students should be able to:

- Design terrestrial and aquatic habitats that provide healthy environments for the plant and animal inhabitants.
- Propose changes to an aquatic or terrestrial habitat that increase the health of organisms (i.e., moisten the soil in a terrarium, add water to an aquarium).

## **Standard 7: Diversity and Continuity of Life**

Reproduction, Heredity and Development

Students should know that:

1. The offspring of some plants and animals resemble the parents (i.e., a tree seedling resembles a mature tree).

Students should be able to:

- Describe similarities and differences between parents and offspring, such as size and color.
3. All plants and animals go through a life cycle of birth, growth, development, reproduction, and death. This cycle is predictable and describable, but differs from organism to organism.

Students should be able to:

- Recognize that organisms change over time. Record and communicate changes observed in living things over time.
- Construct, through the use of pictorials, the life cycle of guppies. Describe the guppy in different stages of its life cycle.

## Diversity and Evolution

Students should know that:

1. Many different kinds of plants and animals live throughout the world. These plants and animals can be grouped according to the characteristics they share.

Students should be able to:

- Recognize that there are many different kinds of plants and animals in the world. Sort terrestrial animals from aquatic animals. Identify the characteristics used to separate the terrestrial from aquatic animals.
- Recognize that some plants and animals are maintained in artificial environments to meet human wants and needs (i.e., scientific study, education, food).

## **Standard 8: Ecology**

Interactions within the Environment

Students should know that:

1. An interconnectedness exists among the living and nonliving parts of an environment. This interconnectedness can be observed by the changes made by plants and animals in their environment.

Students should be able to:

- Identify and describe the different kinds of living things in an aquatic or terrestrial environment. Recognize that living things coexist in these environments.
  - Describe how aquatic plants and animals interact with each other and their environment (e.g., fish use plants for food and shelter).
  - Describe how terrestrial plants and animals interact with each other and their environment (e.g., millipedes eat decaying bark).
2. Plants and animals need enough space and resources to survive. Overcrowding leads to an increased need for resources.

#### Energy Flow and Material Cycles in the Environment

Students should know that:

1. All animals depend on plants. Some animals eat plants for food. Other animals eat animals that have eaten plants.

Students should be able to:

- Recognize that energy needed by all living things originates from the Sun.
- Identify and give examples showing that animals eat plants or other animals for energy, and that plants get energy from the Sun.

#### **Big Ideas**

Observation of living organisms and their interactions with their habitat

Change of habitat and living organisms over time

Observations of the structures of living organisms and how they function in their environments

Study of Life Cycles of plants and animals in a terrarium and aquarium habitat

#### **Unit Enduring Understandings**

*Students will understand that...*

Living organisms have basic needs for survival

Each plant or animal has different structures that have different functions that influence their growth and survival.

Plants and animals have life cycles that differ from organism to organism.

All organism change the environment where they live, some changes are harmful and some are beneficial.

### **Unit Essential Question(s)**

How do organism's structures help them survive in their environment?

How do organisms change their environment over time?

What do living organisms need for survival?

What are the stages that living organisms go through in their life cycles?

### **Knowledge & Skills**

Knowledge:

- how to use their senses to observe living organisms.
- that organisms have basic needs for survival.
- organisms go through a life cycle that includes, birth, growth and death
- freshwater and woodland plants have similar needs (nutrients, water, sunlight, space and air).
- freshwater and woodland animals have similar needs (food, water, space, shelter, and air).
- that humans are similar to many other organisms in regards to needs and life cycle.

Skill:

- Generate questions and predictions using observations and exploration about the natural world.
- Generate and follow simple plans using systematic observations to explore questions and predictions.
- Collect data using observations, simple tools and equipment. Record data in tables, charts, and bar graphs.
- Compare data with others to examine and question results.
- Construct a simple explanation by analyzing observational data. Revise the explanation when given new evidence or information gained from other resources or from further investigation.
- Share simple plans, data, and explanations with an audience and justify the results using the evidence from the investigation.

- Use mathematics, reading, writing, and technology when conducting an investigation and communicating the results.
- Select the hand lens as an appropriate instrument for observing the structure of aquatic and terrestrial organisms in greater detail.
- Observe individuals of the same plant or animal group. Describe physical differences (e.g., size, color, shape, markings).
- Identify and describe structures of plants and animals that help them survive in aquatic and terrestrial environments.
- Sort and group plants and animals based on the structures that enable them to function in their environment (e.g., animals that have fins for swimming versus animals that have legs for movement on land).
- Compare and contrast the observable structures of humans to those of other animals and plants. Record and communicate the similarities and differences in their structures.
- Observe a variety of plants and animals and identify basic needs that are common to plants or animals of the same group, such as food, water, air, shelter, space and light.
- Design terrestrial and aquatic habitats that provide healthy environments for the plant and animal inhabitants.
- Propose changes to an aquatic or terrestrial habitat that increase the health of organisms (i.e., moisten the soil in a terrarium, add water to an aquarium).
- Recognize that organisms change over time. Record and communicate changes observed in living things over time.
- Construct, through the use of pictorials, the life cycle of guppies. Describe the guppy in different stages of its life cycle.
- Describe similarities and differences between parents and offspring, such as size and color.
- Recognize that there are many different kinds of plants and animals in the world. Sort terrestrial animals from aquatic animals. Identify the characteristics used to separate the terrestrial from aquatic animals.
- Recognize that some plants and animals are maintained in artificial environments to meet human wants and needs (i.e., scientific study, education, food).
- Identify and describe the different kinds of living things in an aquatic or terrestrial environment. Recognize that living things coexist in these environments.
- Describe how aquatic plants and animals interact with each other and their environment (e.g., fish use plants for food and shelter).
- Describe how terrestrial plants and animals interact with each other and their environment (e.g., millipedes eat decaying bark).
- Recognize that energy needed by all living things originates from the Sun.
- Identify and give examples showing that animals eat plants or other animals for energy, and that plants get energy from the Sun.

**Stage 2: Assessment Evidence**  
(Design Assessments To Guide Instruction)

**Suggested Performance Task(s)**

Organisms assessment for Grade One can be found at  
[http://www.doe.k12.de.us/programs/sci\\_assess/default.shtml](http://www.doe.k12.de.us/programs/sci_assess/default.shtml)

#### Key Transfer Ideas

1. There is a wide variety of living things on Earth that have basic needs such as food, light, water, air, space, and shelter.
2. Organisms grow and develop, change, and die over time.
3. Each type of organisms has specific needs such as type of food, amount of water, amount of light, amount of space, and type of shelter.
4. Humans are also similar to other organisms performing similar life processes for example, growth and development, motion, digestion, excretion, respiration, and reproduction.

Students are expected to:

- Observe a terrarium and draw a picture of it, labeling the living organisms.
- Identify non-living components of the terrarium.
- Observe and relate changes to a terrarium over time.
- Identify basic needs of organisms in the terrarium.
- Distinguish between living and non-living things.
- Sequence pictures of the life cycle of a plant from seed to mature plant.
- Compare humans with other organisms in terms of basic needs and functions.
- Recognize the characteristics of a living plant.
- Relate that organisms have specific needs to survive.
- Describe the change to organisms if there were no sunlight.

#### Rubrics/checklists for Performance Tasks

Organisms assessment for Grade One can be found at  
[http://www.doe.k12.de.us/programs/sci\\_assess/default.shtml](http://www.doe.k12.de.us/programs/sci_assess/default.shtml)

#### Other Evidence

**Formative Assessment #1** (administer after Lesson 4):

Use one of the plants from Lesson 2 and another plant of your choice. Tell students to complete the Venn Diagram by telling how the two

plants are alike and different. (\*You may read the questions to the class.)

**Scoring Guide:**

2- Student completes Venn Diagram with 4 ways the two plants are alike AND 4 ways they are different. (e.g. likenesses might be, green, has stem, leaves, grows, need air, etc.; differences would depend on the two plants.

1 – Student partially completes diagram with 6 -4 likenesses and differences.

0 – Student gives less than 4 comparisons.

**Formative Assessment #2** (administer after Lesson 7):

Focus students' attention on a terrarium. Read the question and students list 1 living and 1 non-living organism. Repeat procedure for #2.

**Scoring Guide:**

2 – Student gives correct responses.

1- Student gives only 1 correct response.

0 – Student fails to give a correct response.

**Formative Assessment #3** (administer after Lesson 12)

Place a terrarium in a prominent place in the classroom. Read the questions making sure children understand they are to think of how the terrarium has changed since they first made it. Repeat procedure using an aquarium for question #2.

**Scoring Guide:**

2- Students give correct responses for terrarium and aquarium.

1- Students give at least 1 correct change for the terrarium and the aquarium.

0- Responses are incorrect.

**Stage 3: Learning Plan**

**Key learning events needed to achieve unit goals**

Resource: STC Organisms, National Science Resource Center, Washington DC

**Lesson 1: Pre-unit Assessment: Sharing What We Know About Organisms**

Students make a list about what they know about living organisms and what they need to survive.

**Lesson 2: Observing and Describing Seeds**

Students observe and compare four different seeds.

**Lesson 3: Planting Our Seeds**

Students plant the seeds that they observed in Lesson 2.

**Lesson 4: Observing Woodland Plants**

Students observe and compare moss and an evergreen seedling, which are eventually placed into their terrariums.

**Lesson 5: Observing Fresh Water Plants**

Students observe and compare fresh water plants which are eventually placed into their aquariums.

**Lesson 6: How Have Our Seeds Changed?**

Students observe and record changes about their planted seeds.

**Lesson 7: Observing Fresh Water Snails**

Students observe and describe the structures of the fresh water snails and observe the interactions between the snail and its environment.

**Lesson 8: Observing Guppies: How Do They Compare With the Snails?**

Students observe and describe the structures of a guppy and observe the interactions between the guppy and its environment.

**Lesson 9: Observing Pill Bugs**

Students observe and describe the structures of a Pill Bug and explore the needs of this land animal.

**Lesson 10: Observing Bess Beetles or Millipedes: How Do They Compare With the Pill Bugs?**

Students observe and compare the Bess Beetle or Millipede to the other land animal, the Pill Bug, looking for similarities and differences. These are recorded on a Venn diagram.

**Lesson 11: What is Happening in the Aquarium?**

Students observe and record changes that have taken place in their aquariums, discussing the needs of the organisms and how they have been met.

**Lesson 12: What is Happening in the Terrarium?**

Students observe and record changes that have taken place in their terrariums, discussing the needs of the organisms and how they have been met.

**Lesson 13: Fresh Water and Woodland Plants: How Do They Compare?**

Students use a Venn diagram to compare the characteristics of freshwater and woodland plants.

**Lesson 14: Fresh Water and Woodland Animals: How Do They Compare?**

Students use a Venn diagram to compare the characteristics of freshwater and woodland animals.

**Lesson 15: How Are Our Plants and Animals Alike and Different?**

Students use a Venn diagram to compare fresh water and woodland plants and animals. This is a lesson to summarize characteristics observed of living organisms throughout the unit.

**Lesson 16: Taking a Look at Ourselves**

Students observe and describe characteristics of humans, and compare their characteristics to the plants and animals that they have observed.

**Lesson 17: STC Post Unit Assessment**

Students draw a living organism and explain what it needs to survive.

**Resources & Teaching Tips** (Consider the two questions below when completing this section.)

- **What text/print/media/kit/web resources best support this unit?**
  - Stories included in the Organisms Teacher's Guide
    - Four Amazing Plants (Lesson 13)
    - A Crocodile Comes to the Zoo (Lesson 15)
  
- **What tips to teachers of the unit can you offer about likely rough spots/student misunderstandings and performance**

**weaknesses, and how to troubleshoot those issues?**

**Lesson 2**

Make an overhead of “Observing and Describing Seeds”. Do the green seed observation together.

**Lesson 3**

Plant seeds on a Thursday or Friday. Germination takes about 4 days.

In the Planting Card Booklet, add extra observation sheets for each planting card.

**Lesson 4**

It is our suggestion that this lesson be split over 2 days. Make the terrarium on one day, and do observations on the next.

Students can build the terrariums with teacher guidance. Make an overhead of recording sheet 4-B. Teacher assembles an example terrarium, and records each step on the overhead (draws gravel, leaf litter, soil). Students draw and label this information on their copies of sheet 4-B. Students use this technical drawing to assemble their own group terrariums.

The layout on the back of recording sheet 4-A is confusing for the student. Use the back of planting card 1 and 2 as the back of sheet 4-A. This will help the students track where to continue writing their observations on the back of the sheet.

**Lesson 5**

Use same ideas listed in Lesson 4. for building the aquariums.

**Lesson 7**

It is difficult for the students to actually see the parts of the snail. So make an overhead and hard copy of figure 7-1 so that students can label the parts with teacher guidance, and so that conversations about structure/function can take place. Then give the students the snail to observe.

The layout of recording sheet is confusing. So use the ideas from lesson 4.

**Lesson 8**

Use figure 8-1 and use the same procedures described in lesson 7.

**Lesson 9**

Use figure 9-1 and use same procedures described in lesson 7.

Recording 9-A can be adjusted as described in Lesson 4.

**Lesson 10**

Use figure 10-1 and 10-2 as described in lesson 7.

**Lesson 15 and 16**

Make Venn diagram bigger and add lines.

For observing all of the different organisms, reduce the senses pictures from lesson 1, to make a recording sheets similar to figure 2-1. This will remind students to use all of their senses in their observations.

**Accommodation/Differentiation ideas and tips**